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בקשה לפטנט

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שיטה להסרת פיגמנטים מהעור

(בעברית)
(Hebrew)

METHOD FOR REMOVING A PIGMENTED SECTION OF SKIN

(באנגלית)
(English)

מבקש בזאת כי ינתן לי עליה פטנט hereby apply for a patent to be granted to me in respect thereof.

*בקשת חלוקה - Application of Division		*בקשת פטנט מוסף - Application for Patent Addition	*דרישה דין קדימה Priority Claim		
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חתימת המבקש Signature of Applicant Luzzatto & Luzzatto By: Attorneys for Applicant		היום 9 בחודש יוני שנה 2003 of the year of This			לשימוש הלישכה

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16284/03

שיטה להסרת פיגמנטים מהעור

METHOD FOR REMOVING A PIGMENTED SECTION OF SKIN

A METHOD FOR REMOVING A PIGMENTED SECTION OF SKIN

Field of the Invention

The present invention relates to the field of pigments removal. More
5 particularly, the invention relates to a method for removing a pigmented
section of skin, preferably a tattoo.

Background of the Invention

Tattoos are created by injecting ink into the skin. Today, in most cases, the
10 injection of the ink is done by one or more needles which are attached to a
device. Such a device will be called hereinafter a skin puncturing device.
Preferably, but not limitatively, the skin puncturing device is a hand-held
device. The skin puncturing device moves the needle along the
longitudinal axis of the needle, similar to the movement of a needle in a
15 sewing machine. Usually the skin puncturing device moves the needle at a
rate of several vibrations per minute (e.g., the needles may puncture the
skin at the rate of 50 to 3,000 times per minute). Prior to the penetration
of the needle into the skin, the needle is dipped in a suitable solution
which contains pigment (e.g., ink) and then this solution is sucked up
20 through a suitable tube system of the skin puncturing device, alternately,
the solution may be provided to the needle through a capsule suitable to be
connected to the skin puncturing device. After obtaining the solution the
skin puncturing device is used to puncture the top layer of the skin and to

drive insoluble, micrometer-sized particles of ink into the dermal layer of skin (i.e., dermis), preferably, about one millimeter deep. As a result, the ink is not located in the epidermis, but it intermingles with cells in the dermis. Since the cells of the dermis are relatively fixed the tattoo's ink
5 remains at the dermis, thereby tattooing the skin.

For a variety of reasons, there are people who wish to remove a tattoo from their skin. However, because tattoos are intermingled with cells in the dermis, removing them is not an easy task. In the prior art, several
10 methods for removing tattoos exist, which methods are usually invasive, some of them even require surgery and may also be painful. Such known methods are:

- Dermabrasion, wherein skin is "sanded" (i.e., abraded) to remove the surface which contains the tattoo;
- 15 - Cryosurgery, wherein the area where the tattoo is located is frozen prior to its removal; and
- Excision, wherein the dermatologic surgeon removes the tattoo with a scalpel and closes the wound with stitches (In some cases involving large tattoos, a skin graft from another part of the body
20 may be necessary).

However, such tattoos removal methods may involve pain, and they may also create scars.

Other methods for tattoo removal use lasers. Lasers offer a bloodless alternative to the abovementioned methods which may also have fewer side effects. Each removal procedure is done or in a single or series of treatments. Patients may or may not require topical or local anesthesia. Lasers removes tattoos by producing short pulses of intense light that pass through the top layers of the skin to be selectively absorbed by the tattoo pigment. This laser energy causes the tattoo pigment to fragment into smaller particles that are then removed by the body's immune system. However, there is still a possibility that using a laser may cause scarring. Furthermore, it is difficult to remove with the lasers pigments having colors such as yellow and green. Such colors selectively absorb laser light and can only be treated by selected lasers based on the pigment color. Moreover, there are side effects of laser procedures which may cause for hyperpigmentation, or an abundance of color in the skin at the treatment site, and hypopigmentation, where the treated area lacks normal skin color.

In addition, having a tattoo removed in each of the above method is long and expensive.

All the methods described above have not yet provided satisfactory solutions to the problem of removing a pigmented section of skin in simple means.

- 5 It is an object of the present invention to provide a method for removing a pigmented section of skin while overcoming the drawbacks of the prior art.

It is another object of the present invention to provide a method for removing a pigmented section of skin in relatively low cost.

10

Other objects and advantages of the invention will become apparent as the description proceeds.

Summary of the Invention

- 15 The present invention relates to a method for removing a pigmented section of a skin, which comprises: a) providing a skin puncturing device which includes at least one needle; b) puncturing the skin at said pigmented section with said skin puncturing device while said skin puncturing device contains no ink, and injecting or not an aqueous
- 20 material; c) providing a pad containing one or more materials capable of absorbing moisture from the mixture of said aqueous material with the pigments at said section, or absorbing moisture from the mixture of said pigments with the cellular fluids at said section; and d) bandaging said

punctured skin with said pad, thereby causing the pigments at said section to migrate from their location toward the outer layer of the skin.

According to a preferred embodiment of the present invention, the method
5 further comprises bandaging the punctured skin with pad containing one or more antiseptic materials for preventing infections.

Preferably, the skin puncturing device is an electric device for creating tattoos.

10

According to a preferred embodiment of the present invention, the needle is hollow. Preferably, the skin puncturing device is further provided with suction means. According to a preferred embodiment of the present invention, the method further comprises, prior to the bandaging of the
15 punctured skin, during the puncturing of said skin, performing suction of the pigments from said punctured skin with the suction means.

Preferably, the material used to administer the pigments is saline.

20 **Brief Description of the Drawings**

The above and other characteristics and advantages of the invention will be better understood through the following illustrative and non-limitative

detailed description of preferred embodiments thereof, with reference to the appended drawings, wherein:

- Fig. 1 schematically illustrates a skin puncturing device provided with suction means;
- 5 - Fig. 2A is a photograph showing a head of an eagle being tattooed on a human arm; and
- Figs. 2B and 2C are photographs showing the head of the eagle of Fig. 2A after part of it was removed by using the method of the present invention.

10

Detailed Description of Preferred Embodiments

The present invention relates to a method for removing a pigmented section of a skin by puncturing the skin at the pigmented section and then bandaging the punctured section with a suitable adsorbing pad. The pad
15 must contain one or more materials, such as saline, which will cause the pigments at the punctured section to migrate and to be absorbed into the outer layer of skin. Preferably, but not limitatively, the pad is an adsorbent pad suitable to absorb moisture from an aqueous mixture of tattoo ink. Of course, the materials which will cause the pigments at the
20 punctured section to migrate and to be absorbed into the outer layer of skin may be in the form of a solution, a solid material or a combination of both a solution and a solid material.

Preferably, after puncturing the area, a treatment for preventing infections should be provided for the skin in that area. Of course, the adsorbent pad may contain one or more antiseptic materials, such as Benzalkonium Chloride based cream (e.g., Bepanthen), Silver sulfadiazine
5 based cream (e.g., Silverol) etc., or such antiseptic materials may be applied separately. For example, the adsorbent pad or other separate pad may contain pastes and/or creams known in the art, such as Vitamerfen, Bepanthen, Silverol and the like, or the antiseptic based cream may be applied directly to the treated area and covered by a pad.

10

According to a preferred embodiment of the present invention, the skin can be punctured by a skin puncturing device which includes at least one needle, such as the one used for creating tattoos, while operating this device in the same way as creating tattoos but without using ink. As an
15 option, an aqueous solution or other material that does not contain pigments may be used (i.e., injected to the punctured area) instead of the ink, thereby allowing the pad containing one or more materials to absorb moisture from the mixture of the aqueous solution with the pigments at the punctured area. In cases when an aqueous solution is not used while
20 puncturing the skin, the pad is capable of absorbing moisture from the mixture of the pigments with the cellular fluids at the punctured section.

In typical puncturing devices, the penetrating depth of the needle to the skin is adjustable. Preferably, but not limitatively, the needle does not penetrate beyond the hypodermis layer of the skin. Thereby, the puncturing device does not penetrate beyond the hypodermis layer of the skin and thus no further damage to the skin is created while using the method of the present invention.

According to a preferred embodiment of the present invention, the needle of the skin puncturing device is hollow and the device is further provided with suction means for performing a suction of the skin pigments during the puncturing activity of the skin. Fig. 1 schematically illustrates a skin puncturing device 10 provided with such suction means, according to a preferred embodiment of the invention. The skin puncturing device 10 comprises suction means 12 coupled to needle 11 via the tube system (not shown) of the skin puncturing device 10.

For example, Fig. 2A is a photograph showing a head of an eagle being tattooed on an arm. Figs. 2B and 2C are photographs showing the head of the eagle of Fig. 2A after part of it (i.e., the tattooed feathers at the neck of the eagle) was removed by using the method of the present invention.

The above examples and description have of course been provided only for the purpose of illustration, and are not intended to limit the invention in


any way. As will be appreciated by the skilled person, the invention can be carried out in a great variety of ways, employing more than one technique from those described above, all without exceeding the scope of the invention.

CLAIMS

1. A method for removing a pigmented section of a skin, comprising:
 - a) providing a skin puncturing device which includes at least one needle;
 - 5 b) puncturing the skin at said pigmented section with said skin puncturing device while said skin puncturing device contains no ink and, as an option, injecting an aqueous solution during the puncturing of said skin;
 - 10 c) providing a pad containing one or more materials capable of absorbing moisture from the mixture of said aqueous solution with the pigments at said section, or absorbing moisture from the mixture of said pigments with the cellular fluids at said section; and
 - 15 d) bandaging said punctured skin with said pad, thereby causing the pigments at said section to migrate from their location toward the outer layer of the skin.
2. A method according to claim 1, further comprising bandaging the punctured skin with pad containing one or more antiseptic materials,
20 for preventing infections.
3. A method according to claim 1, wherein the skin puncturing device is an electronic device for creating tattoos.

4. A method according to claim 1, wherein the needle attached to the skin puncturing device is hollow.
- 5 5. A method according to claims 1 and 4, wherein the skin puncturing device is further provided with suction means.
6. A method according to claim 1, further comprising, prior to the bandaging of the punctured skin, during the puncture of said skin performing the suction of the pigments from said punctured skin with
10 the suction means.
7. A method according to claim 1, wherein the material used to absorb the moisture or the pigments is in form of a solution, a solid material or combination of both a solution and a solid material.
15
8. A method according to claim 7, wherein the material is saline.
9. An adsorbent pad suitable to absorb moisture from an aqueous mixture of tattoo ink.
20
10. An adsorbent pad as claimed in claim 9, further comprising one or more antiseptic materials.

11. A skin puncturing device comprising suction means coupled to the needle(s)
- 5 12. A method for removing a pigmented section of a skin, substantially as described and illustrated.

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By  1111

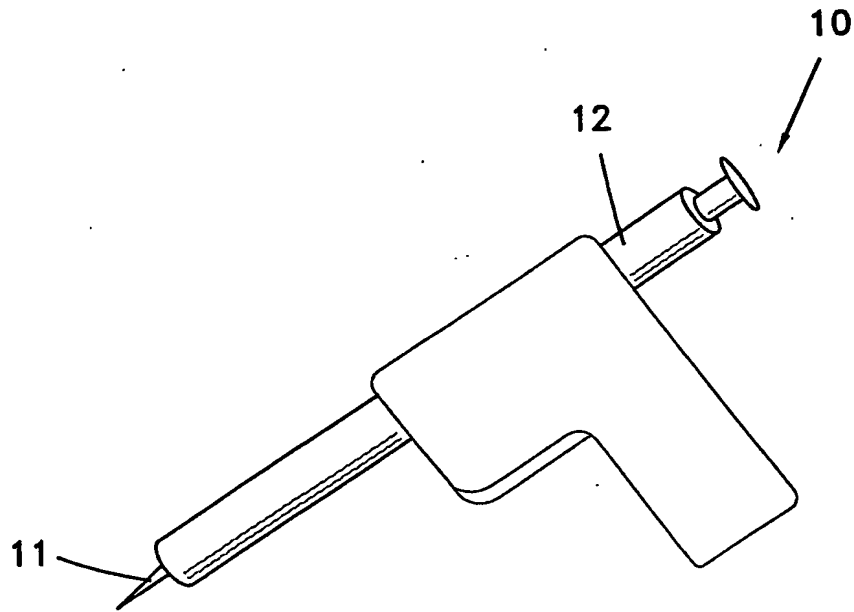


Fig. 1

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Fig. 2A

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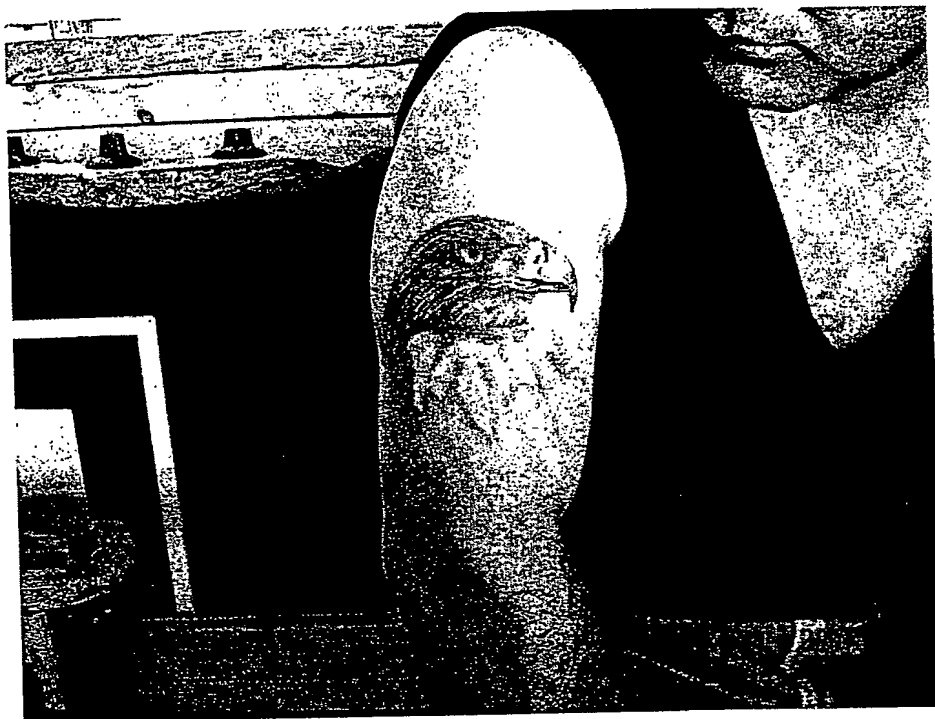


Fig. 2B

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Fig. 2C